DELAWARE CENTER FOR THE INLAND BAYS

Inland Bays Journal

SUMMER 2018

Giving Eels a "Leg Up"

By: Andrew McGowan

Every fall, adult American Eels start an incredible journey from the freshwater rivers, streams, and ponds of the Atlantic coast all the way to the Sargasso Sea, an area in the Atlantic Ocean roughly between the Bahamas and Bermuda.

Eels from the entire range of the population (Canada to Mexico) all congregate together to spawn, dying after laying eggs that will grow into the next generation.

These tiny eggs and larvae these adults produce will drift for thousands of miles with the ocean currents, entering estuaries up and down the Atlantic Coast, including our Delaware Inland Bays. By the time these creatures have reached our bays they are almost entirely see-through, and no more than a few inches long, they are termed 'glass eels'. These glass eels will move up the estuary in search of freshwater creeks and ponds that serve as important nursery habitat. Unfortunately, in many cases, their several thousand-mile journey is abruptly ended by dams.

Within the Inland Bays, several dams prevent eels from reaching their preferred freshwater habitats. It is barriers like these, in addition to other habitat losses, toxins, disease, and

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Larval glass eel

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The Inland Bays Journal is a publication of the Delaware Center for the Inland Bays. The CIB is a nonprofit organization and a National Estuary Program. The purpose of the Inland Bays Journal is to educate and inform citizens and visitors to the Inland Bays watershed about this "estuary of national significance."

302-226-8105
inlandbays.org
outreach@inlandbays.org

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DEAR FRIENDS OF THE BAYS,

I was fortunate to have two remarkable mentors in my life.

The first was a distinguished professor of wetland ecology at East Carolina University, Dr. Mark Brinson, who served as my advisor on my Master's thesis. The second was Dr. Kent Price, who was not only an accomplished marine biologist, but was also instrumental in the development of both the University of Delaware College of Marine Studies and the Delaware Center for the Inland Bays, where he served as the first Board Chair and guided my service as the Science Coordinator.

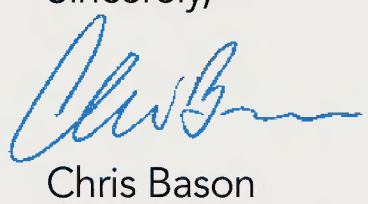
Aside from sharing extraordinary devotion to their work, they both possessed a particular way of participating in discussions that made a lasting impression on me. Whatever the topic or size of the group, they remained generally quiet for much of the deliberations. During that time they listened. They absorbed information from all participants no matter the perspective or delivery. No checking email, no looking at phones—just concentration on what was being said. Then, as time for discussion waned, or discourse got too hot, or things went round once to many times, they would speak. Their words invariably integrated the most important aspects of the dialogue into an ascendant path towards the shared purpose of the group. I cannot remember a time when another participant disagreed so much that they could not go forward together.

The act of listening is powerful.

Today, more and more people are concerned about the quality of water in Delaware. Extraordinarily widespread water contamination is interacting with a changing climate to create compounding problems. Funding needs for water infrastructure and pollution control are astronomical. Yet agreement on how to meet those needs avoids political priority. Some members of the public feel as though their concerns about water are not being listened to.

A hallmark of the National Estuary Program (the Center is one of 28 from sea to shining sea) is focus on community involvement. At the Center, we take community involvement seriously and it is reflected in the diverse membership of our Board, our Citizens Advisory Committee, and in the people served by and serving our mission. Listening plays an important role in community involvement, and as we develop a five year update of the Inland Bays Comprehensive Conservation and Management Plan we have been doing a lot of listening. Online surveys, input from our Board and Committees and and meetings of our technical and community partners have all informed its development. We have heard and share the desires of the local community for clean water, healthy and abundant living resources, and plentiful opportunities to enjoy them. And we pledge to transform the powerful act of listening into an updated plan for clean Bays to be completed early next year.

Sincerely,



Chris Bason
Executive Director

CIB MISSION

To preserve, protect and restore Delaware's Inland Bays, the water that flows into them, and the watershed around them.

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High Stakes: The Future of Our Marshes

Meadows of salt marsh cordgrass teeming with fish and birds...

The knees of bald cypress trees poking up from tea-colored swamp water...

Vernal woodland pools nurturing the eggs of rare amphibians that rely upon them...

by Dr. Marianne Walch, Science & Restoration Coordinator

All of these types of wetlands are prominent features of our watershed, and they play a critical role in the health of the Inland Bays.

Wetlands provide many important services to humans and the environment. They improve surface water quality by filtering out chemical pollutants and sediment. They purify our drinking water supply. They stabilize shorelines and protect upland areas from flooding and storm damage. They remove and store large amounts of atmospheric carbon that contributes to climate change. They provide critical habitat for fish, shellfish, waterfowl and other wildlife. They support 80% of Delaware's rarest plants and 98% of the state's commercially important fisheries. And they are places of immense beauty and wonder.

However, both tidal and freshwater wetlands in the Inland Bays face multiple threats. Nearly two thirds of the 75,000 acres of wetlands that existed here a few hundred years ago have been lost to ditching, and agricultural and urban development. The majority of the acres lost are freshwater wetlands in the headwaters of the Bays.

But salt marshes are also succumbing to nearshore development and sea level rise. The Indian River inlet has steadily deepened over time, increasing the tidal range and salinity of the Bays and further stressing fringing marshes.

A significant feature of many Inland Bays salt marshes is the increasing appearance of open water pools in the interior of the marsh. These areas are drowning due to sea level rise and damage from old ditches dug to control mosquitos.

To better understand the health and future outlook for our tidal wetlands, the Center conducts a long-term monitoring program that measures the rates of sediment accumulation in several Inland Bays salt marshes. In order for a marsh to stay healthy, the amount of sediment deposited its surface over time must keep pace with sea level rise to stay above water. This allows plants to grow and continually stabilize the soils with their roots.

Ultimately, the data collected by Center can be used to design wetland restoration plans and inform land use decisions that affect the health of our wetlands. Passage of a County ordinance requiring that wide, undeveloped buffers be maintained next to saltmarshes, allowing them to migrate inland as water levels rise, will be critical for their long term survival. With rising sea levels and increasing development, the stakes for the Bays are higher than ever.

Indian River Woes Inspire Community Event

by Dr. Marianne Walch

On November 2, 2017, the news broke that the Department of Natural Resources and Environmental Control had issued a Notice of Violation (NOV) to the Mountaire Farms poultry processing facility in Millsboro, DE. It was found that the facility had failed to comply with their wastewater and agricultural utilization of biosolids permit and had been polluting groundwater with excess nitrogen among other violations. At times, wastewater effluent concentrations of nitrogen reached over 40 times the permitted limit, and concentrations of fecal coliform reached over 5,500 times the permitted limit.

The poultry processing facility sits right on the Indian River, and the permit violations can have detrimental impacts on water quality and human health. In response to the NOV, the Center for the Inland Bays Board of Directors formed an ad hoc Committee in December 2017. The Committee discussed publicly available information obtained using Freedom of Information Act requests and published a report on April 9, that detailed their findings including past permit violations and nutrient concentrations of the Indian River and Bay.

DNREC has monitored water quality of the Indian River near the facility since at least 2000 and the average total nitrogen concentration is over twice the healthy limit and phosphorus is 40% higher than the healthy limit. The Report found that Mountaire had exceeded permit levels for total nitrogen in wastewater effluent since 2015.

The information the NOV and the Report shed on the Indian River and Bay water quality issues was disheartening. It was clear that this entire issue had cast a shadow of doubt over the ability of the individual to combat water pollution.

Each year, the Indian River is used by countless residents and visitors. Wildlife, too, depend on it as a source of food and shelter. Cormorants, osprey and great blue herons build nests along its shores, while Weakfish and American eels use it as a nursery for their young. As part of the Inland Bays watershed, the Indian River also plays a vital role by providing fresh water to the Inland Bays.

But in light of the water quality issues that these waterways face, how can these residents and visitors help?

On May 10, over 250 participants swarmed Cupola Park, in Millsboro to find out. This first ever River Rally was both a celebration of the Indian River and an effort to empower residents and visitors to get involved in their own way.

At the 25 stations, visitors explored what fish live in the river, checked out how oysters help clean water, zoomed in on some plankton, found out what issues the River is facing, and received information on how they can do their part to care for the River. Whether you're writing a Letter to the Editor or avoiding excess (or any!) lawn fertilization, everyone can do a little bit to promote bigger change.

Jonathan Cohen, an Assistant Professor at the University of Delaware shows this youngster what lives in a drop of water

The highlight of the night, though, was perhaps the Blessing of the River ceremony, led by Herman Jackson of the Nanticoke Tribe. In light of all of the stressors that we're putting on our watershed, Herman underscored the importance of caring for the land and waters that provide their bounty for us.

After such an inspiring evening, those were all words that we can take to heart.

Delaware Deserves Clean Water

by Amy Barra

The Center is part of the steering committee for the Clean Water. Delaware's Clear Choice Campaign that includes the Delaware Nature Society, the Partnership for the Delaware Estuary and the University of Delaware Water Resources Agency. These partner agencies are currently working together on a three-year education and outreach project to explain the need for dedicated funding for clean water projects.

But the Clean Water Alliance is much more than these four organizations. The Alliance is made up of other organizations that value clean water. Alliance members range from concerned citizen groups, environmental organizations, recreation groups, businesses, breweries, restaurants and more. This diverse group works together towards one common goal: to educate others about the importance of clean water and to advocate for funding for clean water projects.

The Center kicked off the Clean Water Campaign in Sussex County in early March with an evening meeting. So many people registered for the Kick-off that the Center's staff had to quickly find an alternative venue, as the group was too large to fit in the Center's conference room. It was clear that clean water is an important topic for those living in Sussex County.

State Senator Brian Townsend encourages clean water supporters to stay persistent with their message at the Clean Water Rally.

Lieutenant Governor Bethany Hall-Long addresses Clean Water Rally attendees

96 Sussex Countians attended the Clean Water Kick Off on March 13 in Dewey Beach

Then, on March 28, over 80 concerned citizens, organization representatives and business owners streamed into the Natural Resources Committee hearing at Delaware's Legislative Hall in Dover to speak about House Bill 270. This bill was created by a 28-member legislative task force and proposes to charge a small sliding-scale fee to raise funds for clean water projects. Over 30 people provided testimonies, with the vast majority in favor of passing the bill through the committee. After these impassioned and informed presentations, the room waited for the decision from the Committee. Though the committee members debated multiple points of the bill and expressed their support of clean water, the majority voted to table the bill. For many of us this decision to table the bill was disappointing.

The Steering Committee and Alliance Members have continued to work to secure funding for clean water. In addition to signing a letter supporting $6 million of funding for clean water, Alliance members and Steering Committee organizers held a rally outside Legislative Hall on June 5. The Center agrees with Senator Bryan Townsend's concluding statement, that "2019 is going to be the year for clean water."

(Eels continued from page 1)

overfishing that have drastically reduced American Eel populations and prevented young eels from reaching their freshwater nurseries. The Atlantic States Marine Fisheries Commission manages the American Eel population, and although the regional population of eels seems stable over the last 16 years, the stock remains depleted. This depletion is of particular concern because eels are important both ecologically, functioning as both predator and prey, and economically, supporting a multi-million-dollar commercial fishery.

In an effort to open up freshwater habitat to migrating glass eels, the Center for the Inland Bays built three "eel passages" in 2017. These structures are designed to allow glass eels to travel over dams such as those on Betts and Burtons Ponds, and enter the freshwater ponds and streams on the other side. By opening up these habitats, it is believed that more American Eels will reach sexual maturity, which means more glass eels in future years, and eventually, a robust and abundant eel population.

These experimental eel passages were monitored throughout the winter and early spring, and unfortunately, these devices did not function as intended. However, as with all restoration projects, a little tweaking and design modification can go a long way, and by the end of the season, the continued monitoring of glass eel migrations and behavior had revealed what changes needed to be made to the passages. Glass eels were most abundant along the side of the creeks, presumably using the exposed roots and fallen logs as cover from predation. Relocating the entrance of one of the eel passages from the middle of the stream to the edge of the stream will place the eel passage in the direct path of the glass eels.

Despite the issues encountered in using the eel passages, thousands of eels were still transported by hand over the three dams by DNREC and the CIB during the winter and spring of 2017. The lucky eels that made it over will mature and grow, and hopefully one day leave the Inland Bays to spawn, producing a future generation of glass eels that will return to find fully functioning eel passages, and with them, access to miles of freshwater habitat.

Center Board Chair, Susie Ball, and Environmental Scientist, Andrew McGowan, affix the eelway to a piling of the dam.

Eels found in the Inland Bays during the Center's annual citizen science Fish Survey.

Eel mops help to monitor baby eels in several creeks where dams may be preventing migration.

New Center Staff: A Comprehensive Field Guide

Amy Barra

Outreach & Education Coordinator

Habitat: Native to the Adirondack Mountains, but currently found on Delmarva

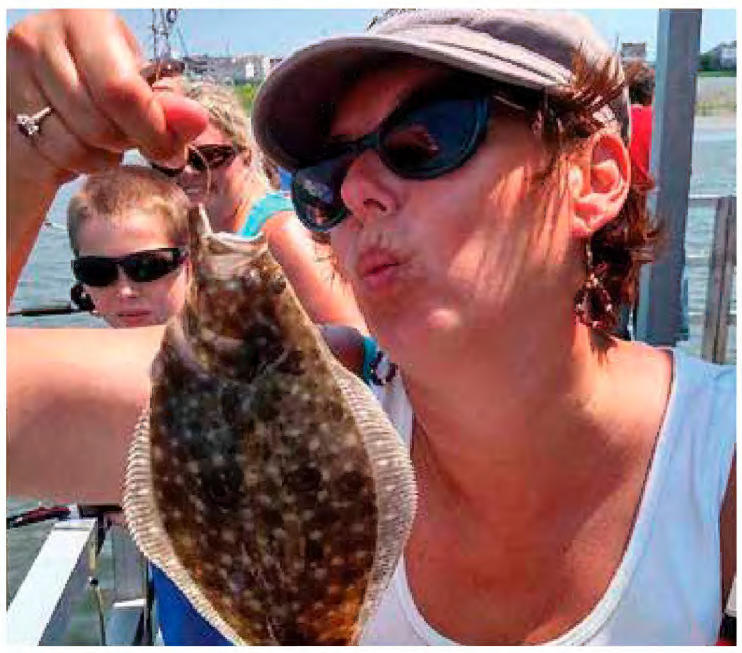
Identification: Often found running educational programs or speaking at events, may appear coated in mud, water, or occasionally paint. Extremely enthusiastic upon finding interesting creatures in the bay, or when spotting a cute dog (on a leash) at the James Farm.

Victoria Spice

Science and Restoration Project Manager

Habitat: Berlin, MD

Identification: May be seen at various Center restoration projects sites. Can be spotted working with restaurants participating in Don't Chuck Your Shucks. Is also identified by distinct white camper van when traveling outside normal habitat range. May be observed improving local habitat with native plantings.



Mary Knight

Development Coordinator

Habitat: Native to New Jersey, but has been found in Milton, DE since 2016

Identification: Easily identified by constant smile and upbeat attitude. Can be seen developing and running fundraising events and working with various partner organizations. Additionally, can often be spotted fishing along the bays or beaches after 5 p.m. or on weekends.

Michelle Schmidt

Watershed Coordinator

Habitat: Montgomery County, MD to Berlin, MD

Identification: Can be found creating partnerships for the Inland Bays Comprehensive Conservation and Management Plan or writing grant proposals. Is often leading workshops or conference calls. Seems to be drawn to water, and can be seen kayaking, swimming or sunbathing. Commonly exhibits behavior known as "Cross-fitting."

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